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Additional Ideas

- If you have prepared slides available you can use other marine organisms (i.e. sea star or zooplankton larvae) to compare with your phytoplankton sample.
- Once students have a basic understanding of relative size of phytoplankton compared to other common objects have them compare different types of phytoplankton.
 - Is there a size difference between dinoflagellates and diatoms?
 - Do individuals of the same species vary in size?



How Big Are Phytoplankton?

e



Southeast Phytoplankton Monitoring Network

www.chbr.noaa.gov/CoastalResearch/SEPMN/

Objectives

- To build a solid understanding of the relative size of phytoplankton through comparison with other common objects viewed under a microscope.
- To develop a basic understanding of the unit of measure, micrometer (μm).

Materials

1. Light Microscope (4x, 10x, & 20x objectives)
2. Slides/Cover slips
3. Metric ruler
4. Pipette
5. Scissors
6. Newspaper "e"
7. Human Hair
8. Phytoplankton sample

Optional

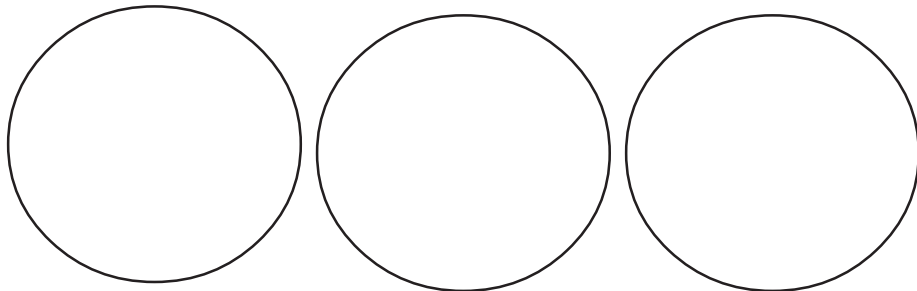
1. Eye Piece with reticule

Helpful Hint

- One micrometer is equal to one-millionth of a meter, or one-thousandth of a millimeter.

$$1\text{mm} = 1000\mu\text{m}$$

- Use Protoslow to keep dinoflagellates and zooplankton from moving in your sample.



Sample			
Objective			
Estimated Size			

Procedure

I. Field of View Determination

- a. With the lowest power microscope objective (4x) in position, place the millimeter (mm) ruler on the center of the stage, so the scale is visible through the eyepiece.
- b. Line up the 0mm line with the left side of the circular field of view.
- c. Determine the distance across the circular field of view (in mm).
- d. Record diameter in chart 1.
- e. Repeat the process for the 10x and 20x objectives.

DATA TABLE 1			
OBJECTIVE	TOTAL MAGNIFICATION	FIELD OF VIEW	
4X	40X	mm	μm
10X	100X	mm	μm
20X	200X	mm	μm

II. Size Estimation

- a. Using three separate slides and coverslips mount the newspaper "e" strand of human hair, and phytoplankton sample.
- b. View each slide with a light microscope using the 10x objective in the following order:
 - I. newspaper "e"
 - II. human hair
 - III. phytoplankton sample
- c. In lab books, or on a piece of paper, have students draw the microscopic field of vision for each sample.
- d. Record sample name and microscopic objective setting. Based on the size of the circular field of view determined above, estimate the size of each sample and record the data.